

ABSTRACT OF THE INVENTION

A semiconductor device that has a p-n junction with a photosensitive region partially having a diffusion region and a non-diffused region when the p-n junction is subjected to a reverse bias voltage. When an incident light (e.g. a laser) is directed at the surface of the photosensitive region, hole-electron pairs are generated in the partial diffusion region within the photosensitive region. As a result, the current through the photosensitive region changes in a substantially linear fashion with the intensity of the incident light. The semiconductor device can be configured in a circuit to provide substantially linear power amplification. The semiconductor device can be configured by itself or with a complimentary device to form push-pull operations.